

**AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (original) A method of detecting faults on a telephone line, the method comprising  
  
comparing measured characteristics of the line with at least one model, said model(s) modelling expected characteristics of the telephone line; and  
  
in response to the comparison, generating a fault alert signal if the comparison between the measured characteristics and the modelled expected characteristics differ by more than a pre-determined threshold,  
  
wherein said characteristics comprise characteristics relating to the transmission of data on the line within a plurality of predetermined frequency bands.
2. (original) A method according to claim 1 wherein a model models the expected characteristics at a pre-determined data rate.
3. (currently amended) A method according to claim 1 ~~or 2~~ wherein the comparison involves a goodness-of-fit test.
4. (original) A method according to claim 3 wherein the comparison involves calculating the Chi-squared statistic.
5. (currently amended) A method according to claim 3 ~~or 4~~ wherein the comparison involves comparing the number of zeros in said pre-determined frequency bands for the measured and expected characteristics.
6. (currently amended) A method according to ~~any one of claims 3 to 5~~ claim 3 wherein the comparison involves calculating the sum of absolute difference between consecutive said predetermined frequency bands.

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7. (currently amended) A method according to ~~any one of claims 3 to 6~~ claim 3 wherein the comparison involves calculating the number of said pre-determined frequency bands the data for which is less than expected.

8. (original) A method according to claim 7 wherein the comparison involves calculating the number of said pre-determined frequency bands the data for which is less than 50% of the expected.

9. (currently amended) A method according to ~~any one of claims 3 to 8~~ claim 3 wherein the comparison involves calculating the number of said pre-determined frequency bands the data for which is greater than expected.

10. (original) A method according to claim 9 wherein the comparison involves calculating the number of said pre-determined frequency bands the data for which is 200% of the expected.

11. (currently amended) A method according to ~~any preceding claim~~ claim 1 wherein the characteristics of the line represent the frequency distribution for data transmitted via the line.

12. (original) A method according to claim 13 wherein the characteristics of the line represent the bin occupancy distribution of discrete multi tones.

13. (currently amended) A method according to ~~any preceding claim~~ claim 1 wherein the telephone line is a Digital Subscriber Line.

14. (original) A method of generating models for use in a method of detecting faults on a telephone line, the fault detection method comprising comparing measured characteristics of the line with a model, said model modelling expected characteristics of the telephone line, and in response to the comparison, generating a fault alert signal if the comparison between the measured characteristics and the modelled expected characteristics differ by more than a pre-determined threshold, the model generation method comprising:

receiving data representing characteristics of a telephone line; and

forming a model which generally represents the received characteristics of the line,

wherein said characteristics comprise characteristics relating to the transmission of data on the line within a plurality of predetermined frequency bands.

15. (original) A method according to claim 14 further comprising forming a model for the characteristics of the line at a variety of bit rates.

16. (currently amended) A method according to claim 14 ~~or 15~~ further comprising forming a model for the characteristics of the line for a subset of said predetermined frequency bands.

17. (original) A device for detecting faults on a telephone line, the device comprising:

an input for receiving data from a line to be tested for faults;

a processor for measuring characteristics of the data;

a comparator for comparing the measured characteristics of the line with a model, said model modelling expected characteristics of a telephone line; and

fault alert device for generating a fault alert signal in response to the comparison, if the comparison between the measured characteristics and the modelled expected characteristics differs by more than a pre-determined threshold

wherein said characteristics comprise characteristics relating to the transmission of data on the line within a plurality of predetermined frequency bands.

18. (original) A method for monitoring quality of a telephone line, the method comprising:

comparing measured characteristics of the line with a model, said model modelling expected characteristics of the telephone line, the comparison step involving a goodness-of-fit test between the measured characteristics and the modelled expected

characteristics, wherein said characteristics comprise characteristics relating to the transmission of data on the line within a plurality of predetermined frequency bands.

19. (original) A method according to claim 18 wherein, in response to the comparison, generating a fault alert signal if the comparison between the measured characteristics and the modelled expected characteristics is statistically significantly different.

20. (currently amended) A method according to claim 18 ~~or claim 19~~, further comprising periodically carrying out the comparison step over a period of time to monitor for changes in the characteristics of the telephone line over the period of time.